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A NEW ARGYROHIPPIUS FROM THE DESEADO
BEDS OF PATAGONIA

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RESULTS OF THE FIRST MARSHALL FIELD PALEONTOLOGICAL EXPEDITION
TO ARGENTINA AND BOLIVIA, 1922-24

The notohippid genus *Argyrohippus* has hitherto been known from two species, *A. fraterculus* and *A. boulei*, both of which occur in the Colhué-Huapí beds. Simpson (1932, p. 12) has recently designated *A. fraterculus* as the genotype. The present communication describes a third species from the earlier Deseado beds. The excellent specimen of *A. fraterculus* collected by the Scarritt Patagonian Expedition has greatly facilitated the description and comparison of the new form. I am indebted to Mr. Elmer S. Riggs for the privilege of describing the species. The drawings are by Mr. Carl F. Gronemann, Staff Illustrator, Field Museum.

The premolars of the holotype were described and figured on page 97 of this volume under the name of *Argyrohippus* sp.

Argyrohippus praecox sp. nov.

Holotype.—F.M. No. P13334. Incomplete palate with RP^2-M^3 and alveolus of P^1 and the root of the canine, LM^1-3 ; horizontal ramus of left mandible with P_2-M_2 and alveoli of anterior teeth. Collected by George F. Sternberg, 1924.

Paratypes.—F.M. No. P13486. Palatal fragment with RM^1-3 . F.M. No. P13475. Fragment of left mandible with M_1-3 . Collected by John B. Abbott, 1924. F.M. No. P14697. Fragment of left mandible with P_2-M_2 . Collected by George F. Sternberg, 1924.

Horizon and locality.—Deseado beds, La Flecha, province of Santa Cruz, Argentina.

Diagnosis.—Teeth more brachyodont than those of *A. fraterculus*; small upper canine present and in series with the premolars; P^1 relatively large; infraorbital foramen smaller than in *A. fraterculus* and well removed (15 mm.) from anterior border of orbit.

Discussion.—As shown by the American Museum specimen of *A. fraterculus*, the most characteristic features of the genus are the cup-like postero-internal cingula¹ and the absence of anterior cingula on P^2 -⁴, and the thick covering of cement. The new species possesses these characters² and hence may be referred with confidence to *Argyrohippus*. The characters given in the diagnosis readily distinguish *A. praecox* from *A. fraterculus*.³ The teeth of the Deseado species are about one-fourth shorter than those of the genotype. The large infraorbital foramen in *A. fraterculus* is only 7 mm. from the anterior rim of the orbit. The upper canines in the Colhué-Huapí species, according to Ameghino (1902, p. 82), are situated, when present, in the middle of the diastema between I^1 and P^1 ; in *A. praecox* the upper canine is in series with the cheek teeth. The differences in the structure of P^2 between *A. praecox* and *A. fraterculus* have been discussed on pages 96 and 97 of this volume. They may be of specific value but in the absence of a series of specimens I am not prepared to admit them as such. In the holotype of *A. praecox* there are four mental foramina, one in front of P_3 , two beneath P_3 and one beneath the trigonid of P_4 . In a specimen of *A. fraterculus*, F.M. No. P13587, there are three, one beneath the diastema, one beneath P_3 and one beneath M_1 ; on the right side of this specimen there are two small additional foramina one above and one below the large foramen beneath the diastema. Mental foramina, however, tend to be variable and a wider range of specimens is necessary before admitting these differences as specific characters. P_1 may have been present in *A. praecox* and the upper and lower dentitions may have been in series without diastemata but these points cannot be determined from the available material.

¹ Ameghino did not mention this character in his description of the genus (1902, pp. 81-83). Presumably his material was too much worn to show it.

² The cement is considerably abraded on the specimens of *A. praecox* but enough remains to show its former extent. A vestige of an anterior cingulum is present on P^3 of the holotype.

³ The second Colhué-Huapí species, *A. boulei*, was distinguished by Ameghino (1902, p. 83) from *A. fraterculus* on the basis of larger size, simpler enamel folds in the lower cheek teeth, more procumbent symphysis and more proclivous incisors. The difference in size between the two is about 15 per cent, not necessarily in itself a specific character. The slight differences in the enamel folds can hardly be considered as more than individual, possibly even age, variations. The reported differences in the mandibular symphysis constitute the only positive claim of *A. boulei* to specific distinction. Unfortunately, Ameghino has given no figures so that it is impossible to ascertain how much variation exists in this region between the types of the two species. The differences may well be due to pressure after burial. *A. boulei* may be doubtfully retained as valid, pending further information.

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A NEW ARGYROHIPPIUS FROM PATAGONIA

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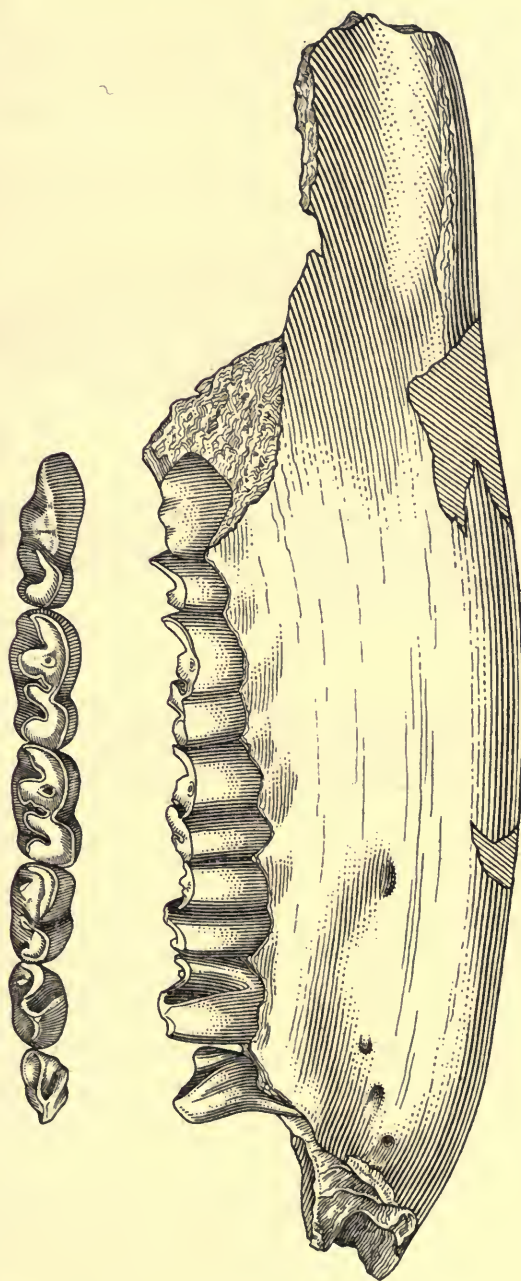


FIG. 34. *Argyrohippus praeceoz* sp. nov. x $\frac{1}{2}$. Holotype, F.M. No. P13334. Horizontal ramus of left mandible with P₂-M₃.

A. praecox and *A. fraterculus* compare very closely. The former, as shown by the differences mentioned above, is the more primitive of the two species, a fact that is in accord with its geological horizon. It is possible that the Deseado species was directly ancestral to the genotype.

The paratype specimens of *A. praecox* are somewhat older than the holotype and satisfactorily show the age characters of the teeth.

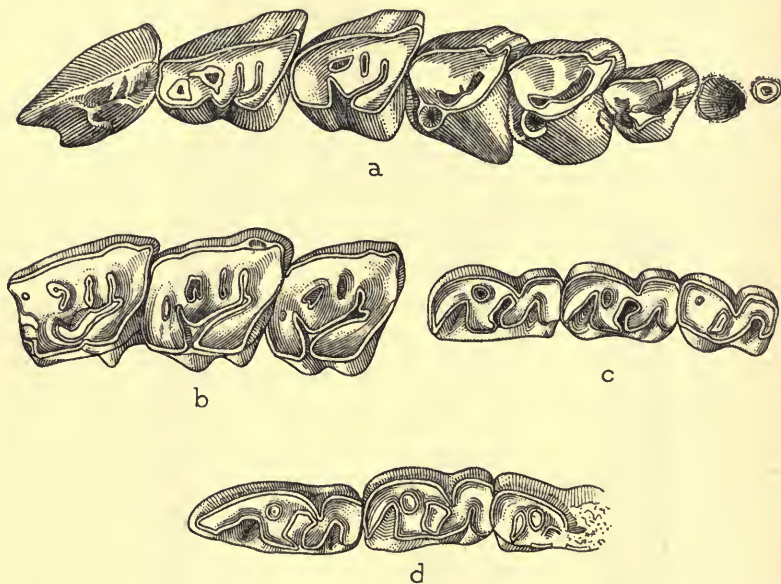


FIG. 35. *Argyrohippus praecox* sp. nov. $\times \frac{1}{2}$. a, Holotype, F.M. No. P13334. RC-M¹. b, Paratype, F.M. No. P13486. RM¹⁻². c, Paratype, F.M. No. P14697. LP₂-M₂. d, Paratype, F.M. No. P13475. LM₁₋₂.

As in many notoungulates, the grinding surfaces of the molars increase in transverse diameter and the details of the crown pattern become obscured by wear. There is a fold in the posterior face of the enamel of the protoloph of M¹⁻² of F.M. No. P13486. As shown by a photograph supplied by Professor W. B. Scott, a similar fold is present on one of Ameghino's specimens of *A. fraterculus*. It is impossible to state at present whether this feature is an age character or an individual variation.

Ameghino considered that *Argyrohippus* was descended from *Morphippus* and ancestral to *Notohippus*. The latter suggestion may eventually be proved correct but *Notohippus* is too little known at present for any definite statement to be made. The former suggestion was unlikely on morphological grounds and the discovery

of *A. praecox* as a contemporary of *Morphippus* in the Deseado greatly increases its improbability.

Measurements.—The antero-posterior measurements have been taken from the mid-points of the anterior and posterior faces of the teeth. The transverse measurements of the lower cheek teeth have been taken across the entoconids, except for P_2 , which lacks this cusp. Transverse measurements of the upper cheek teeth are not given for the sufficient reason that this diameter in most notoungulates with high-crowned teeth varies so much with age as to be useless.

	Field Mus. No. P13334	Field Mus. No. P13486	Field Mus. No. P13475	Field Mus. No. P14697
Canine, ¹ antero-posterior diameter....	4			
Canine, transverse diameter.....	3.25			
Length, P^1-M^2	90			
Length, P^1-M^4	45			
$P^{1,2}$, a.p.....	5.25			
P^2 , a.p.....	9.5			
P^3 , a.p.....	12			
P^4 , a.p.....	12			
Length, M^1-M^2	46	48.5		
M^1 , a.p.....	16	15		
M^2 , a.p.....	17.5	17		
M^3 , a.p.....	17	17.5		
Length, P^2-M^3	90.5			
Length, P^2-M^4	34.5			
P_2 , a.p.....	10			
P_2 , tr.....	5.75			
P_3 , a.p.....	12			
P_3 , tr.....	7.25			
P_4 , a.p.....	12.75			13.25
P_4 , tr.....	7.75			7.75
Length, M_1-M_3	54.5			
M_1 , a.p.....	15.5			15.25
M_1 , tr.....	9.25			9
M_2 , a.p.....	17.5		9	
M_2 , tr.....	9		17	17.5
M_3 , a.p.....	21.75		10.25	9.25
M_3 , tr.....	7.75		23.5	
Depth of ramus beneath alveolus be-			9	
tween P_4 and M_1 , external.....	36			

¹ Measured from the root.

² Measured from the alveolus.

THE AGE OF THE LA FLECHA DEPOSIT

When the collection from this locality was prepared it was believed that the beds were a redeposit containing both Deseado and Colhué-Huapí fossils, and on page 15 of this volume a specimen was stated to have come from the latter horizon. The belief that specimens of Colhué-Huapí age were included was based on the specimen described above, which was at that time referred to *A.*

fraterculus, and on a series of leontiniids with a dental formula of $\frac{3}{3}, \frac{0}{0}, \frac{4}{4}, \frac{3}{3}$, which were tentatively assigned to *Colpodon*. Direct comparison of the *Argyrohippus* with the American Museum specimen of *A. fraterculus* has now revealed that the La Flecha form represents a distinct, more primitive species. The identification of the leontiniids was made on the authority of Loomis, who gave (1914, pp. 108-109) the dental formula of *Colpodon* as $\frac{3}{3}, \frac{0}{0}, \frac{4}{4}, \frac{3}{3}$ and of the Deseado *Ancylocoelus* as $\frac{3}{3}, \frac{0}{0}, \frac{4}{4}, \frac{3}{3}$. In his first account of *Ancylocoelus*, Ameghino (1895, p. 650) held that P_1 was lacking. In his second report (1897, p. 475), however, he stated that the tooth which was lacking above and below and formerly believed by him to be the P_1 might be the canine. The number of teeth of *Ancylocoelus*, according to Ameghino, is therefore the same as in *Colpodon*. During the summer of 1934 I was able to study some casts of Ameghino's specimens of *Ancylocoelus* in the British Museum (Natural History). The casts are identical with the leontiniids from La Flecha in Field Museum. These specimens show that the tooth that is lacking is the canine, thereby making the dental formula of *Ancylocoelus* identical with that of *Colpodon*. The entire fauna from La Flecha is therefore of Deseado age. The specimen described and figured by me on pages 15 to 17 of this volume under the name of *Colpodon* sp. is in reality *Ancylocoelus frequens* Ameghino.

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